Rev. 10/93

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**



IN THE APPLICATION OF:

YVES BADER CASE NO.: HT3805USNA

APPLICATION NO.: 10/663,546 GROUP ART UNIT: 3765

FILED: SEPTEMBER 15, 2003 EXAMINER: SHAUN R. HURLEY

FOR: COMPOSITE TWIST CORE-SPUN YARN AND METHOD AND DEVICE FOR ITS PRODUCTION

**DECLARATION UNDER 37 C.F.R. 1.132**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Yves Bader hereby declare

That I hold a Doctorate of Mechanics (1995) in Textile Engineering from the University of Haute Alsace in France and an undergraduate in engineering (1990) from the Ecole National Superieure des Industries Textiles.

That presently I am a Technical Manager of the DuPont Personal Protection business of E. I. du Pont de Nemours and Company, and for the last 6 years have focused my research on fibers, yarns and fabric technologies with a special focus in the fields dealing with heat and flame protection.

That I am an inventor in U.S. Patent Application 10/663,546 filed September 15, 2003 entitled, "Composite Twist Core-Spun Yam and Method and Device For Its Production."

That I have been advised that claims of my patent application have been rejected based on

(a) Graham, Jr. et al. U.S. Patent 4,541,231,

(b) Sawhney et al. U.S. Patent 5,802,826, and

(c) Graham, Jr. et al. U.S. Patent 4,541,231 in view of Ogawa et al. U.S. Patent 4,520,623.

That I consider that none of the above identified publications are pertinent to my invention.

That I have been advised the rejection based on Graham employs the following wording:

> Graham teaches a core yarn with substantially no torque (Abstract) comprising a central hard filament glass core (Column 2, line 54) with an elongation at break of less than 50% (inherent property; likewise, must have either Z or S twist), and a fiber covering comprising natural comfort fibers (Column 2, line 37) twisted on the core with an opposite twist to that of the core. Graham also teaches its use in woven fabric (Abstract, use in weaving).

That I state in reply Graham is not pertinent, illustratively the following wording is present on Column 2, lines 64 and 65 of this publication, namely "the glass fiber is stiff, resists twist and shears easily."

That I believe the rejection is based on a premise of imparting a twist to a glass fiber core and an opposite twist to the covering on the glass fiber core which premise is incorrect.

That I state Graham produces a balanced yarn by ply twisting:

(a) a glass fiber core having a covering with

(b) a glass fiber core having a covering,

or in other words, (a) and (b) are twisted in opposite directions.

That I note the following wording is present in Graham, Column 3, lines 3 to 11:

> It is within the scope of the invention to employ a pretwisted glass filament core to reduce torque in the resultant core yarn, in such case, the pretwisted filament must be rolled off a spool rather than pulled over the end of a bobbin. **Singles yarns by the spinning process are then ply-twisted in the opposite direction from the singles twist to produce a balanced plied yarn with each singles component having a glass core. (emphasis added)**

That I state Graham has no relevance to my invention.

That I have been advised the rejection based on Sawhney employs the following wording:

> Sawhney teaches a core yarn (9) with substantially no torque (Column 2, lines 28-29) comprising a central hard filament aramid core (Column 5, line 4) with an elongation at break of less than 50%

> (inherent property, likewise must have either Z or S twist), and a fiber covering comprising viscose (Column 5, line 5) UV protection fibers (any property will to a degree protect against UV) twisted on the core with an opposite twist to that of the core. Sawhney also teaches its use in woven fabric.

That I provide the following discussion in reply since this publication has no relevance to my invention.

Sawhney teaches a method using a combination of two "open-ended" spinning techniques: air-jet spinning and friction spinning. Open-ended spinning techniques result in yarns having a "false twist" which changes constantly in an alternating fashion along the length of the yarn. In the method of Sawhney, air-jet spinning is used to make the central core, while friction spinning is used to make the sheath surrounding the core. The result is a core having a false twist surrounded with a sheath having a false twist.

That I am directly aware of the following wording of Sawhney on column 3, lines 14-16:

> Preferably, the twist direction of the airjet spinner is opposite to that of the friction spinner, in order to produce torqueless interlocking of core and sheath....

That I provide the following explanation in reply to the quoted words from Sawhney.

The passage refers to the twist direction used in the spinning machines, but not the twist of the actual resulting yarn. In the combination of air-jet spinning and friction spinning, the twist in the machine is used simply to cohere the filaments. By using opposite directions in the two machines, improved interlocking of the fibres is obtained. However, a lasting true Z- or S-twist is not imparted to the yarn, as in the method of the invention.

For example, in friction spinning, as is used by Sawhney et al. to form the sheath, fibres are fed into the nip of rollers and the fibres are twisted as they pass through the rollers. This imparts a twist that is released when the yarn exits the rollers. The result is a false twist. This is described in Sawhney et al. at Column 2, lines 7-10. A false twist can be observed in the yarn as small areas of randomly distributed S and Z twists, often separated or interspersed with untwisted regions of yarn. Yarns with false twists are intrinsically essentially torque-free, because for each S twist region, there is statistically an opposing Z twist region.

The method of the invention involves imparting a true Z- or S-twist to the core, and an opposite true twist to the sheath, with the torque in the sheath being equal but opposite to that in the core. This results in a torque free yarn. This type of yarn has substantially higher strength than friction-spun yarns. A method producing false twist, as disclosed in Sawhney et al., does not disclose a yarn produced by a method that imparts a true Z- or S-twist to the core and an opposite twist to the sheath, such as the method of the invention.

That I have been advised of a rejection of my invention based on Graham in view of Ogawa et al. with the following wording:

> Graham essentially the invention as discussed above, but fails to specifically teach a twist coefficient in the range of 35-60, which Ogawa teaches is well known in the hard fiber yarn art (Abstract). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to utilize such a well known twist coefficient, so as to ensure proper structure the yarn without destroying the hard fibers therein through over-twisting.

That I state in reply the deficiencies of Graham have been discussed above and Ogawa does not cure these deficiencies.

That I state in summary the Office position is incorrect in any application of the publications discussed above opposite my invention.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

YVES BADER

September 4th 2006
DATE